Electronic Supplementary Information

Synthesis of corundum type In_2O_3 porous spheres and their photocatalytic properties

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1. Experimental details for recovering the catalysts

All the suspensions, including the samples for UV-Vis spectra analysis and the residue in reactor were transferred to centrifuge tubes and washed with ethanol and water for 3 times, respectively. In order to fully recover the spent catalysts, the yellow precipitate was centrifuged at 12000 rpm for 20min to remove the RhB molecules. In this way, the catalysts suffered little loss. Then the catalyst was re-dispersed in 100 mL fresh RhB solution via sonication.

2. Supporting figures

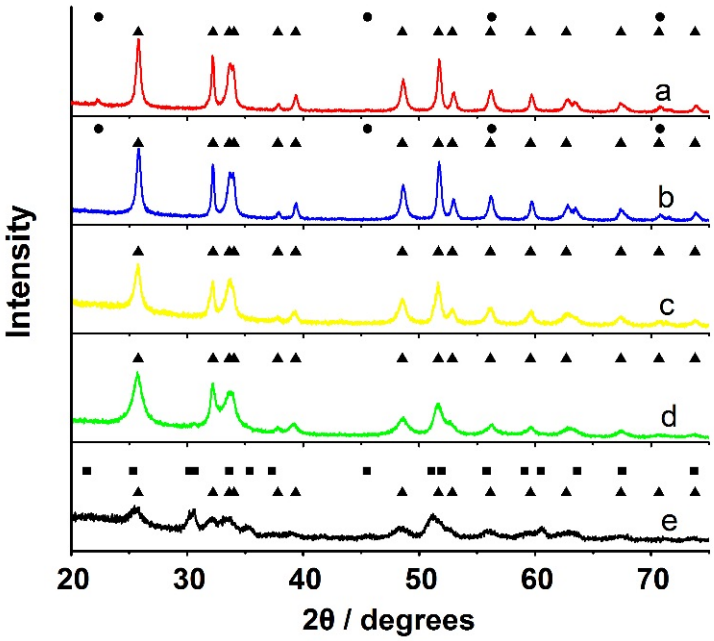

Figure S1. XRD patterns of the obtained samples at different water-ethylene glycol volume ratios: (a) 60:0, (b) 50:10, (c) 40:20, (d) 30:30, (e) 20:40, respectively. All the samples were synthesized at the temperature of 200 °C and reaction time of 16 h. ● $In(OH)_3$ ▲ InOOH ■ c-In_2O_3

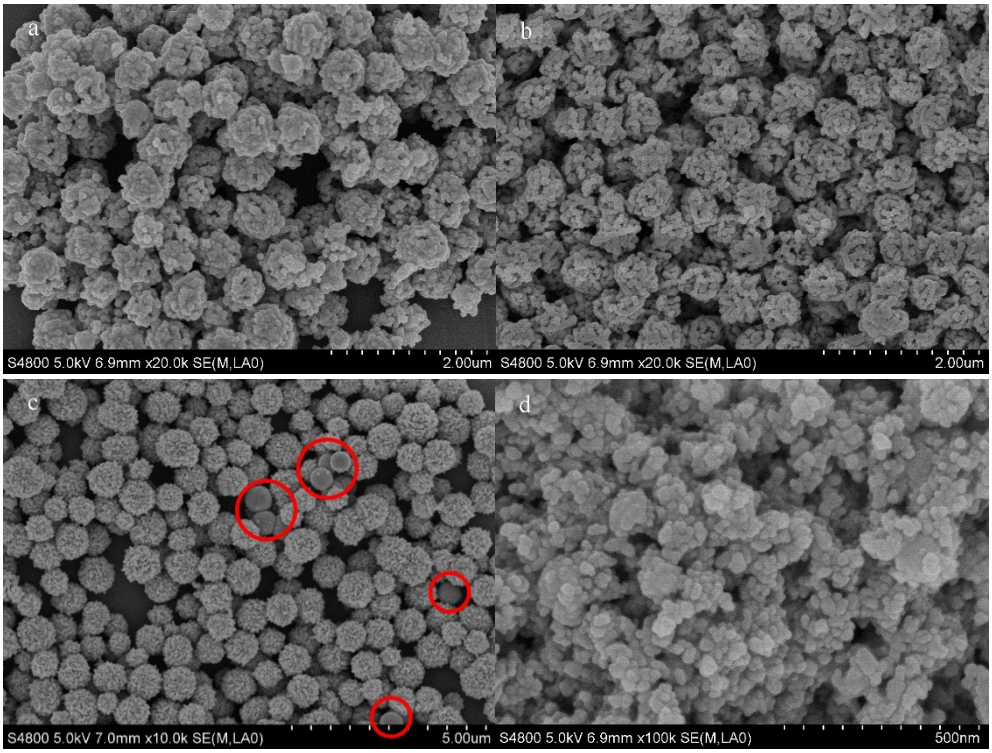

Figure S2. SEM images of the products at different water-ethylene glycol volume ratios: (a) 60:0, (b) 50:10, (c) 40:20, (d) 20:40, respectively. All the samples were synthesized at the temperature of 200 ^{o}C and reaction time of 16 h.

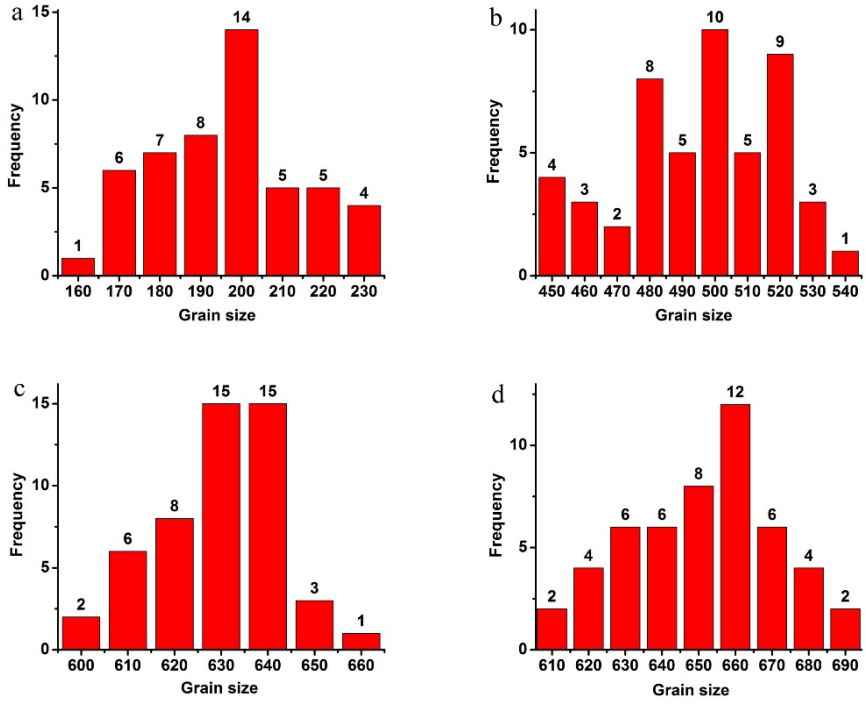

Figure S3. The size distribution histograms for InOOH spheres at different reaction intervals: (a) 2 h, (b) 6 h, (c) 10 h, (d) 16 h, respectively.

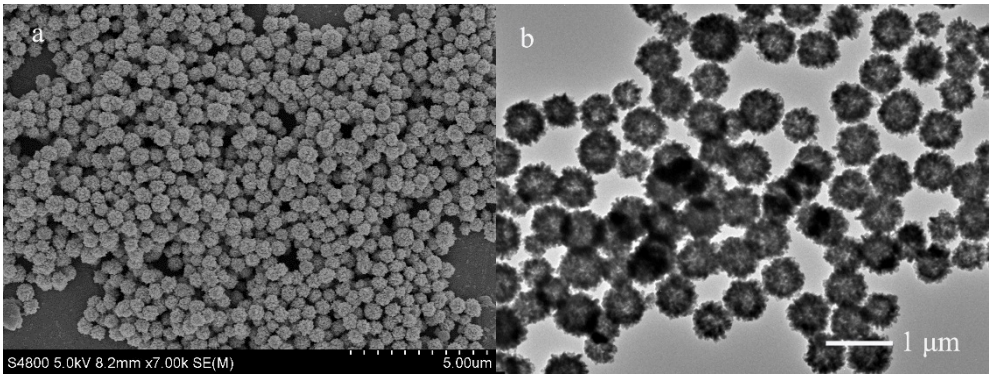

Figure S4. Low magnification SEM (a) and TEM (b) images of h-In_2O_3 porous spheres after calcination at 400 °C. The sample was synthesized at a water-ethylene glycol volume ratio of 30:30, temperature of 200 °C and reaction time of 16 h.

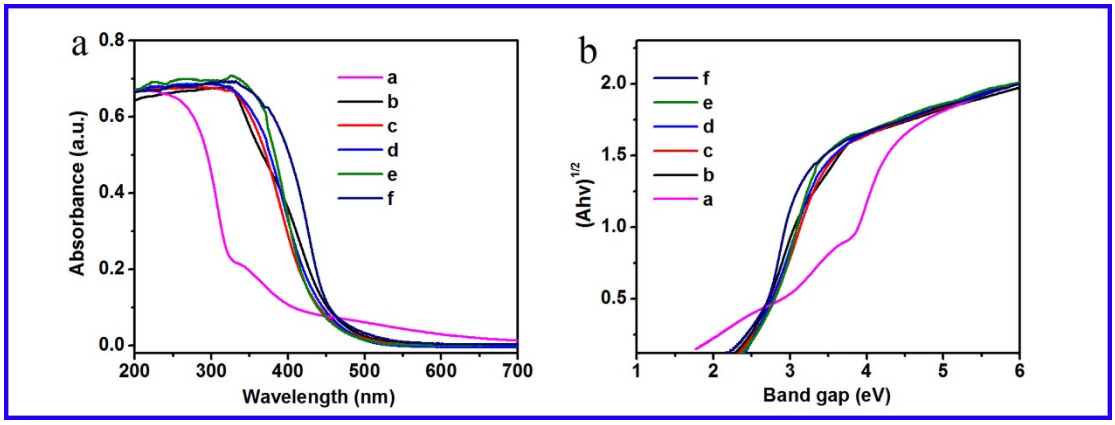

Figure S5. UV-Vis diffuse reflectance spectra and plots of $(Ahυ)^{1/2}$ versus hυ for the band gaps of different samples: (a) InOOH porous spheres; (b) h-In_2O_3 prepared at 140 °C; (c) h-In_2O_3 prepared at 160 °C; (d) h-In_2O_3 prepared at 180 °C; (e) h-In_2O_3 porous spheres; (f) commercial c-In_2O_3. The samples were synthesized at water-ethylene glycol volume ratio of 30:30 and reaction time of 16 h.

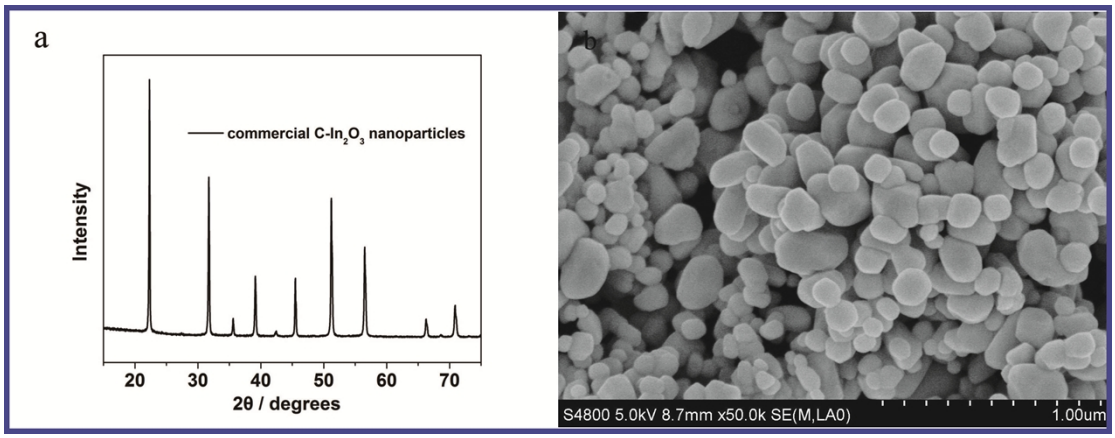

Figure S6. (a) XRD patterns and (b) SEM image of the commercial c-In_2O_3 nanoparticles